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# **Biological Resources Completion Report for the Soil Investigation Project**

## **Topock Compressor Station Needles, California**

**Prepared for  
United States Bureau of Land Management  
United States Fish and Wildlife Service**

**On behalf of  
Pacific Gas and Electric Company**

**December 2008**

**Prepared by  
CH2MHILL**

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Electric  
Company**

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December 23, 2008

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Needles, California 92363

Subject: Biological Resources Completion Report for the Soil Investigation Project:  
Topock Compressor Station, Needles, California

Dear Ms. Wolff-White & Ms. Hall:

This letter transmits the Biological Resources Completion Report for the Soil Investigation Project: Topock Compressor Station. The document is submitted in conformance with the January 2007 *Programmatic Biological Assessment for the Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions* and Condition #30 of the special conditions associated with the Soil Sampling Part A, Phase I field activities performed on the Havasu National Wildlife Refuge in the Department of the Interior approval letter for the Soil Sampling Part A, Phase 1 Project, dated August 22, 2008.

PG&E appreciates your consideration of the attached report. Please contact me at (805) 234-2257 with any questions or concerns.

Sincerely,

Yvonne Meeks  
Topock Project Manager

cc: Carrie Marr/USFWS  
Pamela Innis/DOI  
Aaron Yue/DTSC

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*Report*

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Topock Compressor Station  
Needles, California**

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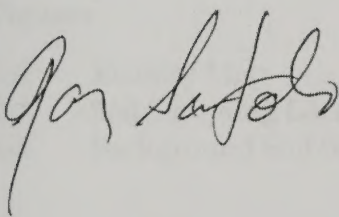
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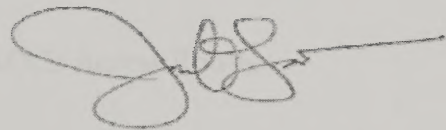


**Biological Resources  
Completion Report for the Soil  
Investigation Project,  
Topock Compressor Station  
Needles, California**



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Gary Santolo  
CH2M HILL Senior Biologist



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Jennifer Low  
CH2M HILL Project Manager





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# Acronyms and Abbreviations

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|       |                                                                                                                                         |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------|
| AOC   | Area of Concern                                                                                                                         |
| BLM   | Bureau of Land Management                                                                                                               |
| ESA   | Endangered Species Act                                                                                                                  |
| HNWR  | Havasu National Wildlife Refuge                                                                                                         |
| PBA   | <i>Programmatic Biological Assessment for the Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions</i> |
| PG&E  | Pacific Gas and Electric Company                                                                                                        |
| SWMU  | Solid Waste Management Unit                                                                                                             |
| USFWS | United States Fish and Wildlife Service                                                                                                 |





# 1.0 Introduction

---

Pacific Gas and Electric Company (PG&E) is addressing chromium in groundwater at the Topock Compressor Station located in eastern San Bernardino County, California, approximately 15 miles southeast of Needles, California. Figure 1-1 provides a site location map for the Topock Compressor Station.

Investigative and remedial activities at the Topock Compressor Station are being performed under the Resource Conservation and Recovery Act Corrective Action process under an agreement between PG&E and the California Department of Toxic Substances Control, as well as under the Comprehensive Environmental Response, Compensation and Liability Act under an agreement between PG&E and the Department of the Interior. Under the terms of these agreements, PG&E is conducting the Resource Conservation and Recovery Act facility investigation/remedial investigation to identify and evaluate the nature and extent of hazardous waste and constituent releases at the compressor station.

This biological completion report documents field activities associated with a soil sampling event conducted at and around the Topock Compressor Station. Soil sampling was conducted at 27 locations collectively:

- Area of Concern (AOC) 4, located on property owned and managed by PG&E. AOC 4 is located southwest of the Topock Compressor Station in the Debris Ravine.
- AOC 9, located on property owned and managed by PG&E, located just southeast of the Topock Compressor Station fenced property.
- AOC 10, located partially on land owned and managed by PG&E, and partially on Havasu National Wildlife Refuge (HNWR) land managed by United States Fish and Wildlife Service (USFWS). AOC 10 is located in the eastern drainage, which is southeast of the Topock Compressor Station.
- AOC 11 located on HNWR land managed by USFWS. AOC 11 is located northeast of the Topock Compressor Station and south of Interstate-40.
- AOC 12, located partially on land owned and managed by PG&E, and partially on Havasu National Wildlife Refuge (HNWR) land managed by United States Fish and Wildlife Service (USFWS). AOC 12 is located northeast of the Topock Compressor Station and south of Interstate-40.
- AOC 14, located partially within the Caltrans Right-of-Way for Interstate 40 on HNWR land managed by USFWS, and partially on land owned and managed by Burlington Northern & Santa Fe Railroad (BNSF). AOC 14 is located northwest of the Topock Compressor Station, south of the Burlington Northern Santa Fe railroad tracks, and north of Interstate-40.
- AOC 1 and Solid Waste Management Unit (SWMU) 1, located in Bat Cave Wash. Bat Cave Wash is partially on PG&E property, partially on HNWR managed by USFWS, and partially on BNSF land. Bat Cave Wash is located west and north of the Topock



Compressor Station, and sample locations extend from south of the Topock Compressor Station to the confluence with the Colorado River in the north.

- Former 300B Pipeline Liquids Tank, located on HNWR managed by USFWS. This site is located east of the Topock Compressor Station and west of the Colorado River.
- Potential Pipe Disposal Area, located on HNWR managed by USFWS. This site is located west of the Topock Compressor Station and south of Interstate-40.
- BKG-01, located on land owned by San Bernardino County and managed by the Bureau of Land Management. BKG is located adjacent to Park Moabi Road, north of BNSF railroad tracks.
- BKG-02 and BKG-03, located on land owned by San Bernardino County and managed by the Bureau of Land Management. Background sample locations BKG-02 and BKG-03 are located within a large unnamed wash north of historic Route-66 and south of Park Moabi Road.
- BKG-04, located on land owned and managed by PG&E. Background sampling location BKG-04 is also located within a large unnamed wash north of historic Route-66 and south of Park Moabi Road.
- BKG-05, BKG-06 and BKG-07, located on land owned and managed by the Bureau of Land Management. These background sampling locations are located adjacent to an existing dirt pipeline maintenance road located west of the Topock Compressor Station and south of Interstate-40.
- BKG-08, BKG-09 and BKG-12, located on land located on HNWR managed by USFWS. These background sample locations are located southwest of the Topock Compressor Station and south of Interstate-40 within the upper reach of Batcave Wash, just downstream of and inactive rock quarry.
- BKG-10 and BKG-11, located on land located on HNWR managed by USFWS. These background sample locations are located southwest of the Topock Compressor Station and south of Interstate-40 within inactive rock quarry.
- BKG-13 and BKG-17, located on HNWR managed by USFWS. These background sample locations are located southwest of the Topock Compressor Station and south of Interstate-40 within inactive rock quarry.
- BKG-14, located on land owned and managed by PG&E. Background sampling location BKG-14 is also located northwest of the Topock Compressor Station, north of historic Route-66 and south of Park Moabi Road.
- BKG-15 and BKG-16, located on land owned and managed by PG&E. Background sampling locations BKG-15 and BKG-16 are located northwest of the Topock Compressor Station along the fence line of the IM-3 facility.

These investigation areas surround the PG&E Topock Compressor Station. These activities have been approved and are addressed in the *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions* (PBA)



(CH2M HILL, 2007). Soil sampling activities followed all applicable General Project Management Measures in the PBA, 2007 USFWS letter of concurrence, and an August 22, 2008 letter from USFWS containing special conditions for the Soil Sampling Part A, Phase 1 Project.

## 1.1 Regional Environmental Setting

The Topock Compressor Station is located in a sparsely populated, rural area. Much of the nearby surrounding land is publicly owned by the federal government and has important spiritual meaning to local Indian tribes. Public lands in the area are owned and/or managed by a number of federal and regional agencies, including the Bureau of Land Management, USFWS, Bureau of Reclamation, and San Bernardino County.

Dominant features of the area include the Colorado River to the east; the Chemehuevi Mountains to the south; the Burlington Northern Santa Fe railroad tracks and bridge; and Interstate 40, which links Barstow, California and Topock, Arizona. Topography in the area is abrupt, rising from around 450 feet above mean sea level at the Colorado River to over 1,200 feet above mean sea level within one mile to the south and southwest.

The area is characterized by arid conditions and high temperatures. The surrounding land consists of a series of terraces divided by desert washes. The landscape within the project area is considerably eroded and can most suitably be described as badlands. The lands are made of small to moderately-sized terraces with very steep slopes. Terraces occurring in the project area are homogeneous, composed of rocky soils with very sparse vegetation. Structurally diverse vegetation in the project area is primarily limited to the Colorado River floodplain and the ephemeral washes.

## 1.2 Report Objectives and Organization

This biological completion report documents field activities associated with collection of soil samples at the nine locations listed above performed between August 22, 2008 and October 24, 2008.

The PBA (CH2M HILL, 2007) was prepared to determine any potential effect on species protected under the federal Endangered Species Act (ESA) resulting from remedial and investigative activities at the Topock Compressor Station. The USFWS concurred with the determinations provided in the PBA, as documented in a letter dated February 8, 2007 (USFWS, 2007). The field activities addressed in this report are included in the PBA; therefore, this report, as part of the PBA, serves as supporting documentation under the ESA for the evaluation of project effects to federally-listed species and resulting determinations.

This report has been prepared in compliance with the General Project Management Measure 23 of the PBA (CH2M HILL, 2007). This condition requires that, within 60 days of completion of construction activities, a brief report shall be prepared for the Bureau of Land Management and the HNWR. This report shall document the effectiveness of the mitigation measures, make recommendations for modifying the measures to enhance species

protection, and provide information on survey and monitoring activities, observed listed species, and the actual acreage disturbed by the project.

To comply with these requirements, this report contains:

- A description of the project activities (Section 2.0).
- Documentation of awareness training and compliance monitoring (Section 3.0).
- Project location and existing disturbed areas (Section 4.0).
- Pre- and post-activity surveys, including the observed listed species (Section 5.0).
- Conclusions, including a discussion of the effectiveness of the mitigation measures and recommendations for modifying the measures to enhance species protection (Section 6.0).



## 2.0 Project Description and Compliance

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The project activities addressed in this report consisted of a soil sampling event at nine locations between August 22, 2008 and October 24, 2008. This section describes the soil sampling activities. The soil sampling locations are depicted in Figure 2-1 and Figure 4-1.

### 2.1 Soil Sampling Activities

Field activities were conducted at nine AOCs, one SWMU, and other undesignated areas as part of the Soil Sampling Part A, Phase 1 sampling project. In addition to these areas, field activities were conducted at 17 background locations. Data collected during these field activities will be used to supplement the existing soil sample data set collected during previous phases of investigation. Field activities conducted during this project include:

- Installation of boreholes for soil sample collection.
- Installation of trenches and potholes for soil sample collection and evaluation of the presence of buried fill and debris material.
- Modification of existing soil embankment in the East Ravine (AOC 10) to facilitate drill rig access.

Rotosonic and direct-push drilling methods, which involve advancing a core barrel through the subsurface, were used to install each borehole. Both the rotosonic and direct-push drilling rigs were track-mounted. The trenching, potholing, and soil embankment modification work was conducted using mechanical digging equipment, including a track-mounted excavator and a rubber-tire backhoe.

Following sample collection, each shallow borehole (less than 20 feet deep) was backfilled with bentonite chips. Three deeper borings installed at SWMU 1 and AOC 1 were backfilled with bentonite slurry. Each trench and pothole was backfilled with the material from that excavation.

## 2.0 Project Description

The project is a study of the effects of the proposed development on the surrounding environment. The study will be conducted in three phases: a preliminary study, a detailed study, and a final study. The preliminary study will be conducted in the first phase, the detailed study in the second phase, and the final study in the third phase.

### 2.1 Soil Sampling Activities

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## 3.0 Awareness Training and Compliance Monitoring

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In accordance with the General Project Management Measure 5 described in the PBA (CH2M HILL, 2007), awareness training was provided to personnel before the start of construction activities. The awareness training focused on the southwestern willow flycatcher (*Empidonax traillii extimus*) and the desert tortoise (*Gopherus agassizii*) for activities in the desert washes and uplands. PG&E and CH2M HILL biologists provided training to onsite personnel prior to initiating work activities. The core groups were trained at the project initiation meeting on August 20, 2008, and new personnel were identified at safety meetings each morning before work. Training included a description of each species; its habitat, natural history, threats, and legal protection under the ESA; potential penalties; current survey findings; management; and protection measures in the PBA, 2007 USFWS letter of concurrence, an August 22, 2008 letter from USFWS containing special conditions for the Soil Sampling Part A, Phase 1 Project, and the CDFG Streambed Alteration Agreement. The awareness training sign-off sheets are provided as Appendix A to this report.

During project activities, a designated PG&E or CH2M HILL field contact representative (FCR) provided compliance monitoring. In accordance with General Project Management Measure 2, the FCR was responsible for overseeing compliance with the mitigation measures.

## 3.0 Awareness Training and Compliance

It is essential that all employees receive training on the importance of maintaining accurate records and the consequences of non-compliance. This training should be conducted annually and should cover the following topics:

- The importance of accurate record keeping for legal and financial reasons.
- The specific requirements of the relevant regulations.
- The consequences of non-compliance, including fines and penalties.
- The role of each employee in maintaining accurate records.
- The importance of confidentiality and data protection.

The training should be delivered in a clear and concise manner, using a variety of methods such as presentations, workshops, and e-learning. It should also include practical exercises to ensure that employees understand how to apply the information in their daily work.

Following the training, it is important to monitor compliance and provide ongoing support. This can be achieved through regular audits, feedback sessions, and the provision of resources such as templates and checklists. The goal is to create a culture of compliance where employees understand the importance of accurate record keeping and are motivated to maintain high standards.



## 4.0 Project Location and Existing Disturbance

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Various past activities have resulted in land disturbance of the general area of the Topock Compressor Station. The area is traversed by a major highway, a railway, several gas pipelines, gas pipeline access roads, overhead electric power lines, county roads, private property access roads, and parking areas.

### 4.1 Soil Sampling Locations

Most soil sampling locations described in Section 2.0, the associated construction staging areas, and the access routes were located within previously-disturbed areas on the Topock Compressor Station and HNWR land adjacent to the Topock Compressor Station.

- AOC 4 is located in an unvegetated narrow steep walled ravine southwest of the Topock Compressor Station. AOC 4 is only accessible by foot but has been disturbed by dumping of debris from a ledge above.
- AOC 9 is previously disturbed and is located southeast of the Topock Compressor Station on a slope behind a PG&E workshop. The slope is sparsely vegetated with creosote bush (*Larrea tridentata*), salt cedar (*Tamarix* spp.), and oleander (*Nerium oleander*).
- AOC 10 is a previously disturbed desert wash located southeast of the Topock Compressor Station. The wash is sparsely vegetated with creosote bush scrub species and has been disturbed by construction of earthen berms, culverts, roads, and pipelines within or adjacent to the wash.
- AOC 11 is located northeast of the Topock Compressor Station and south of Interstate-40 on sparsely vegetated land with creosote bush scrub species. This area has been previously disturbed by pipeline, well, and road construction.
- AOC 12 is sparsely vegetated with creosote bush scrub species and is a graded area located northeast of the Topock Compressor Station. This area has been previously disturbed by pipeline construction.
- AOC 14 is sparsely vegetated with creosote bush scrub species and is located on previously disturbed land south of the Burlington Northern Santa Fe railroad tracks and north of Interstate-40. AOC 14 is located northwest of the Topock Compressor Station.
- Bat Cave Wash (AOC 1 and SWMU 1) is a large desert wash that has been previously disturbed by grading, well, pipeline, and access road construction. AOC 1 and SWMU 1 are located west and northwest of the Topock Compressor Station..
- The Former 300B Pipeline Liquids Tank is an area that housed a liquids tank and is located on previously disturbed land sparsely vegetated with creosote bush scrub. This area is located east of the Topock Compressor Station and west of the Colorado River.



- Potential Pipe Disposal Area is on a previously disturbed area on HNWR. This site is sparsely vegetated with creosote bush scrub species and is located west of the Topock Compressor Station and south of Interstate-40.

Because the soil sampling locations, associated staging areas, and access routes have been used for past activities, these areas have sparse vegetation. All vegetation adjacent to pre-existing disturbed areas was avoided during project activities. All construction occurred within previously disturbed areas. No additional areas were disturbed by the activity, and no habitat loss occurred. Pre- and post-construction photographs are included as Appendix B.

## 4.2 Background Soil Sampling Locations

Seventeen background sample locations were established and sampled during this investigation. All but three background sample locations are located within previously disturbed areas or directly adjacent to previously disturbed land.

- BKG-01 is located on land previously disturbed by grading. This background sampling location is sparsely vegetated with creosote bush scrub species and situated adjacent a well maintained dirt road located east of Park Moabi Road.
- BKG-02, BKG-03, and BKG-04 are located within a large unnamed wash north of historic Route-66 and south of Park Moabi Road. The sample locations were established adjacent to the active channel to limit impacts to the wash. The wash is sparsely vegetated with Mojave desert wash species such as creosote bush, palo verde (*Cercidium* sp.), smoke tree (*Dalea spinosa*), catclaw acacia (*Acacia greggii*), and Mormon tea (*Ephedra* sp.).
- BKG-05 is located within a dirt road at the intersection of two pipeline maintenance roads. Since this sample location is within an actively maintained dirt road, it was previously disturbed and devoid of vegetation prior to sampling.
- BKG-06 and BKG-07 are located on previously disturbed land and situated adjacent to a maintained dirt road. These locations are sparsely vegetated with creosote bush scrub habitat species.
- BKG-08, BKG-09, and BKG-12 are located within Batcave Wash between the Topock Compressor Station downstream and an inactive rock quarry upstream. Although these sample locations have not been directly impacted by quarry activities, the area has seen some indirect impacts. Mined rocks line the channel from bank-to-bank for several hundred feet as a result of storm events carrying rock from the quarry downstream. This channel is devoid of vegetation, likely due to the high velocity of water conveyed through the canyon during storm events.
- BKG-10 and BKG-11 are located on land previously disturbed by past rock quarry operations. These two locations are located with the quarry area and are very sparsely vegetated with creosote bush scrub habitat species.
- BKG-13, BKG-14, and BKG-17 are located directly adjacent to land previously disturbed by construction of the IM-3 facilities. These background sample locations are located less





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Thirdly, it is also true that...

Fourthly, it is also true that...

Fifthly, it is also true that...

Sixthly, it is also true that...

Seventhly, it is also true that...

Eighthly, it is also true that...

Ninthly, it is also true that...

Tenthly, it is also true that...

Eleventhly, it is also true that...



## 5.0 Pre- and Post-activity Surveys

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### 5.1 Southwestern Willow Flycatcher Surveys

Garcia and Associates (GANDA) conducted a protocol survey for the southwestern willow flycatcher (SWFL) (*Empidonax traillii extimus*) for Pacific Gas and Electric (PG&E) near the Topock Compressor Station, 15 miles southeast of Needles, California. The purpose of the survey was to determine the presence or absence of the federally and State of California threatened SWFL. Surveys were conducted following the survey protocol outlined in A Southwestern Willow Flycatcher Natural History and Survey Protocol (Sogge et al. 1997) and the changes outlined in the 2000 US Fish and Wildlife Service (USFWS) revision (USFWS 2000). Surveys were conducted from May 20 to 23, June 3 to 6, June 24 to 27, July 7 to 10, and July 14 to 16, 2008. The areas surveyed included some work sites and surrounding areas.

One pair of SWFL was detected on May 21, 22 and June 3, 2008 between call points A19 and A20 in Site A along the Arizona side of the Colorado River. Two additional pairs of SWFL were detected on May 22, 2008. Although SWFL were detected during the 2008 survey, the detections were most likely of transients, since no detections occurred after the first two survey periods (GANDA 2008a).

### 5.2 Desert Tortoise Surveys

GANDA conducted a 2008 yearly spring field survey for desert tortoise (*Gopherus agassizii*) on the lands surrounding Pacific Gas and Electric Company's (PG&E's) Topock Compressor Station near Needles, California. This area included the work sites and surrounding areas. Desert tortoise presence/absence surveys were conducted from April 23 - 25 and April 28 - May 1, 2008, which is during the active season for this species, in accordance with the protocol (USFWS 1992). Annual surveys are required by the PBA. The purpose of the surveys is to determine the presence or absence of the federally and state-threatened desert tortoise by following the guidelines published in the USFWS Field Survey Protocol for any Federal Action that May Occur Within the Range of the Desert Tortoise (protocol) (USFWS 1992). No desert tortoise were found during the surveys conducted in 2008 (GANDA, 2008b).

On September 24, 2008, during activities associated with implementation of soil sampling activities, a contractor located an aged tortoise chest plate (i.e., plastron) along the PG&E 300 B pipeline right of way near AOC 11C, which is east of the compressor station. Based on review of past reports, this appears to be a new find and is similar to earlier finds indicating that tortoises were there in the past. This area was not included in the initial surveys because the habitat was thought to be unsuitable for tortoise. General Project Management Measure 27 in the PBA (CH2M HILL, 2007) identifies actions required if a dead individual of a listed species is found. As per the PBA, the Bureau of Land Management and USFWS were notified. The plastron was left in place. In addition, the 2008 desert tortoise survey area



was compared to the location of the tortoise plastron, and it appears that the tortoise plastron is located in an area that was not included in previous desert tortoise surveys due to unsuitable habitat conditions. The discovery of the tortoise plastron was reported to federal agencies in a September 25, 2008 telephone call and in an October 2, 2008 email (CH2M HILL, 2008).

### 5.3 Preconstruction Surveys

Between August 19, 2008 and August 21, 2008, prior to the start of construction activity, qualified biologists surveyed work sites and surrounding areas for sensitive biological resources. No work occurred in the floodplain before September 30. No listed species or nesting birds were observed during the pre-activity survey. Photographs of pre-construction conditions are provided in Appendix B.

During the pre-construction survey, sensitive vegetation that was to be avoided was flagged, and the areas were photographed and conditions noted. On November 9, 2008 and December 20, 2008 following soil sampling and demobilization, a post-activity survey was conducted to document field conditions. No listed species were observed during the post-activity survey and this survey occurred outside of the avian nesting season. Photographs of post-construction conditions are provided as Appendix B. All sampling activities were confined to areas with pre-existing disturbance and active channels in the desert wash. No vegetation was cleared as a result of mobilization, soil sampling, and demobilization.

Flora and fauna observed during the pre- and post-activity survey are listed in Table 5-1.

TABLE 5-1

List of Observed Plants and Wildlife Incidental to Pre- and Post-activity Surveys  
*Biological Resources Completion Report for the Soil Investigation Project,*  
*Topock Compressor Station, Needles, California*

| Common Name       | Scientific Name                             |
|-------------------|---------------------------------------------|
| <b>Plants</b>     |                                             |
| Anderson lycium   | <i>Lycium andersonii</i>                    |
| Apricot mallow    | <i>Sphaeralcea ambigua var ambigua</i>      |
| Arrow weed        | <i>Pluchea sericea</i>                      |
| Beavertail cactus | <i>Opuntia basilaris</i>                    |
| Cat claw acacia   | <i>Acacia greggii</i>                       |
| Creosote bush     | <i>Larrea tridentata</i>                    |
| Desert fescue     | <i>Vulpia microstachys var microstachys</i> |
| Desert trumpet    | <i>Eriogonum inflatum</i>                   |
| Fluff grass       | <i>Erioneuron pulchellum</i>                |
| Honey mesquite    | <i>Prosopis glandulosa</i>                  |
| Palo verde        | <i>Parkinsonia spp</i>                      |
| Red brome         | <i>Bromus madritensis var. rubens</i>       |
| Rip-gut brome     | <i>Bromus diandrus</i>                      |
| Russian thistle   | <i>Salsola tragus</i>                       |
| Salt Cedar        | <i>Tamarix ramosissima</i>                  |



**TABLE 5-1**

List of Observed Plants and Wildlife Incidental to Pre- and Post-activity Surveys  
 Biological Resources Completion Report for the Soil Investigation Project,  
 Topock Compressor Station, Needles, California

| Common Name              | Scientific Name                |
|--------------------------|--------------------------------|
| Saltgrass                | <i>Distichlis spicata</i>      |
| Screwbean mesquite       | <i>Prosopis pubescens</i>      |
| Smoke tree               | <i>Dalea spinosa</i>           |
| Storks bill              | <i>Erodium cicutarium</i>      |
| <b>Reptiles</b>          |                                |
| Side-blotched lizard     | <i>Uta stansburiana</i>        |
| Western whiptail         | <i>Cnemidophorus tigris</i>    |
| <b>Birds</b>             |                                |
| Abert's towhee           | <i>Pipilo aberti</i>           |
| Black-throated sparrow   | <i>Amphispiza bilineata</i>    |
| California quail         | <i>Callipepla californica</i>  |
| Canyon wren              | <i>Catherpes mexicanus</i>     |
| Common raven             | <i>Corvus corax</i>            |
| Greater roadrunner       | <i>Geococcyx californianus</i> |
| Great-tailed grackle     | <i>Quiscalus mexicanus</i>     |
| House finch              | <i>Carpodacus mexicanus</i>    |
| House sparrow            | <i>Passer domesticus</i>       |
| Ladder-backed woodpecker | <i>Picoides scalaris</i>       |
| Lesser nighthawk         | <i>Chordeiles acutipennis</i>  |
| Mourning dove            | <i>Zenaida macroura</i>        |
| Red-tailed hawk          | <i>Buteo jamaicensis</i>       |
| Rock pigeon              | <i>Columba livia</i>           |
| Say's phoebe             | <i>Sayornis saya</i>           |
| Turkey vulture           | <i>Cathartes aura</i>          |
| White-crowned sparrow    | <i>Zonotrichia leucophrys</i>  |
| White-winged dove        | <i>Zenaida asiatica</i>        |
| <b>Mammals</b>           |                                |
| Desert cottontail        | <i>Sylvilagus audubonii</i>    |





## 6.0 Conclusion

---

Soil sampling activities were approved by the federal regulatory agencies. In conformance with the PBA General Project Management Measures, personnel were provided with awareness training, and qualified biologists conducted pre- and post-activity surveys in all areas subject to construction use. A Field Contact Representative remained onsite during all construction activities.

The General Project Management Measures described in the PBA were effective in minimizing impacts to the work area and surrounding lands. One recommendation for modifying the measures to enhance species protection is being considered. Dirt roads, including pipeline access roads that cross between suitable and unsuitable habitat, will be surveyed during the annual protocol-level desert tortoise surveys. The project was conducted under a "may affect, but not likely to adversely affect" determination for the southwestern willow flycatcher, Mojave desert tortoise, Yuma clapper rail (*Rallus longirostris yumanensis*), razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*), and a "no effect" determination for the Colorado pikeminnow (*Ptycheilus lucius*). In compliance with these determinations, there was no take of these species.

## 5.0 Conclusion

The results of the study have been reported in the technical report which is available to the public. The results of the study have been reported in the technical report which is available to the public. The results of the study have been reported in the technical report which is available to the public.

The results of the study have been reported in the technical report which is available to the public. The results of the study have been reported in the technical report which is available to the public. The results of the study have been reported in the technical report which is available to the public.



## 7.0 References

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CH2M HILL. 2007. *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions*. January.

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GANDA. 2008b. Desert Tortoise Presence/Absence Surveys for the PG&E Topock Compressor Station. July. Sogge, M.K., R.M. Marshall, S.J. Sferra, and T.J. Tibbits. 1997. A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol. National Park Service Cooperative Studies Unit. USGS Colorado Plateau Research Station- Northern Arizona University, Flagstaff, Arizona. 1997.

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\_\_\_\_\_. 1992. Field Survey Protocol for any Federal Action that May Occur Within the Range of the Desert Tortoise. January 1992.

Reference August 22, 2008 USFWS approval

Reference CDFG Streambed Alteration Agreement

## 1.5 References

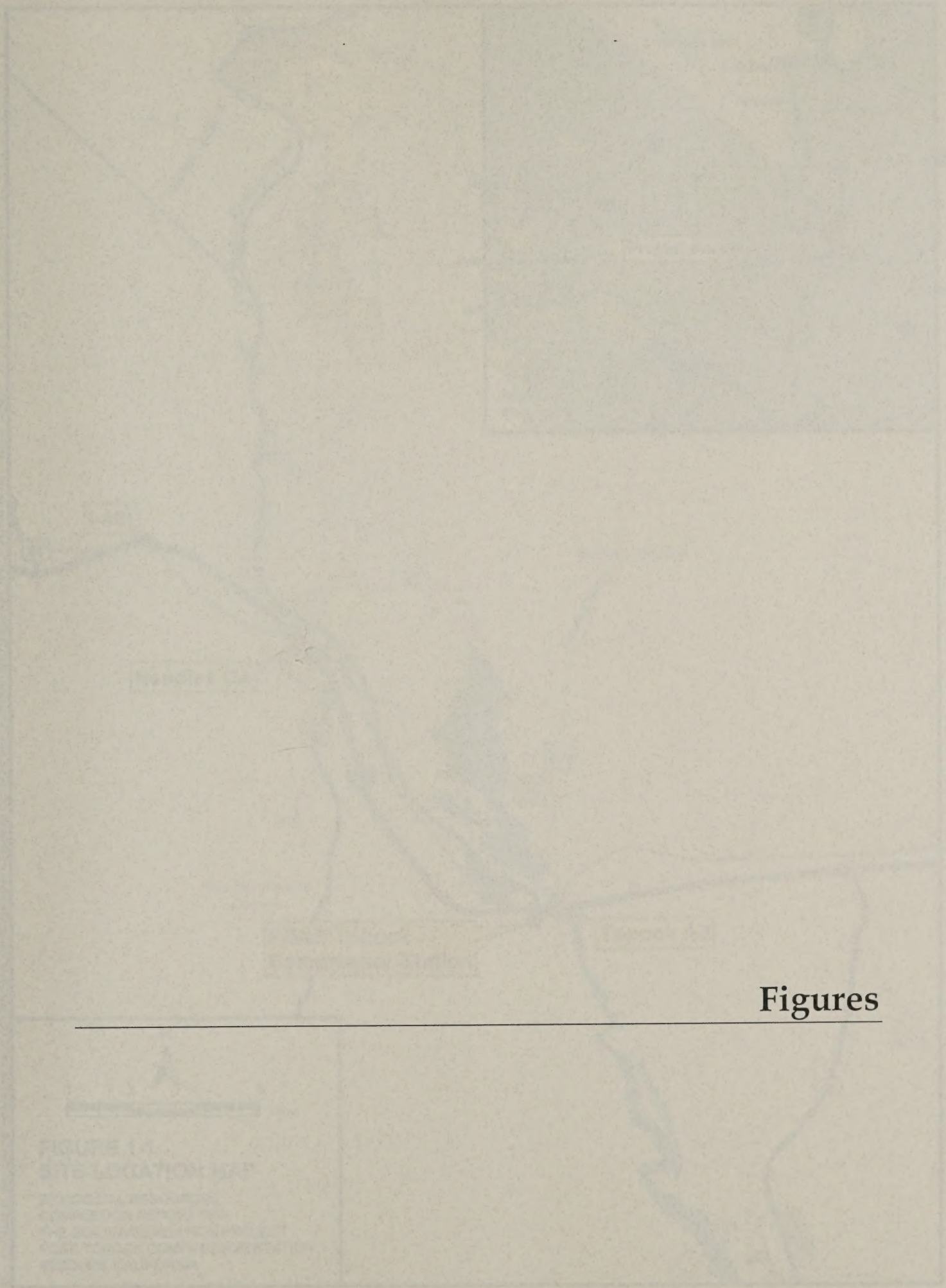
1. J. H. Conway and M. J. Guy, *Symmetry in Games*, Cambridge University Press, 1968.
2. J. H. Conway and M. J. Guy, *Winning Ways for Your Mathematical Plays*, Volume 1, John Wiley & Sons, 1983.
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## Figures

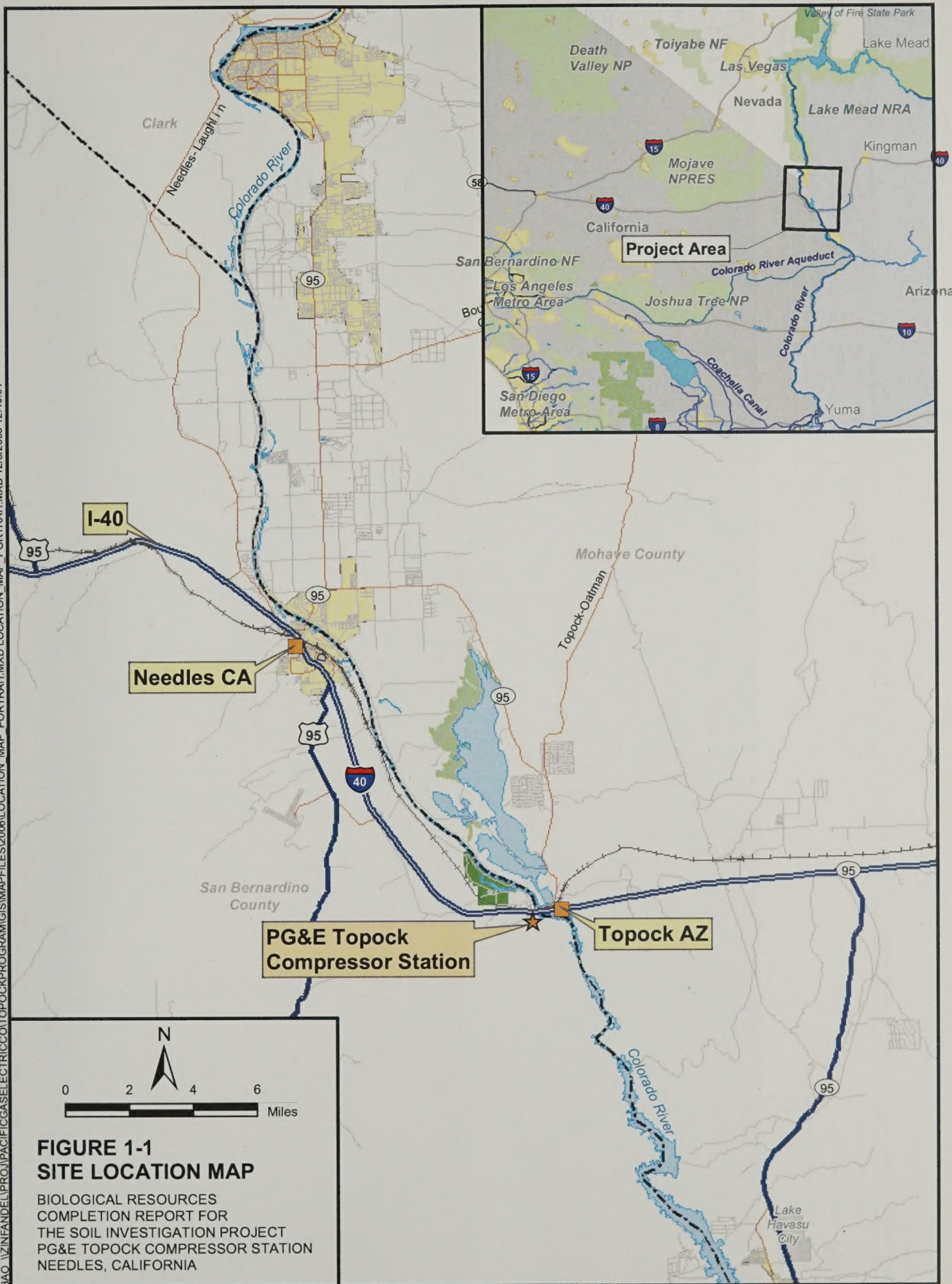
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FIGURE 14  
SITE LOCATION MAP

PROJECT LOCATION  
CONSTRUCTION SITE  
AND OTHER RELEVANT FEATURES  
AS SHOWN ON THE AERIAL PHOTO  
OF THE PROJECT AREA







# **FIGURE 1-1 SITE LOCATION MAP**

BIOLOGICAL RESOURCES  
COMPLETION REPORT FOR  
THE SOIL INVESTIGATION PROJECT  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



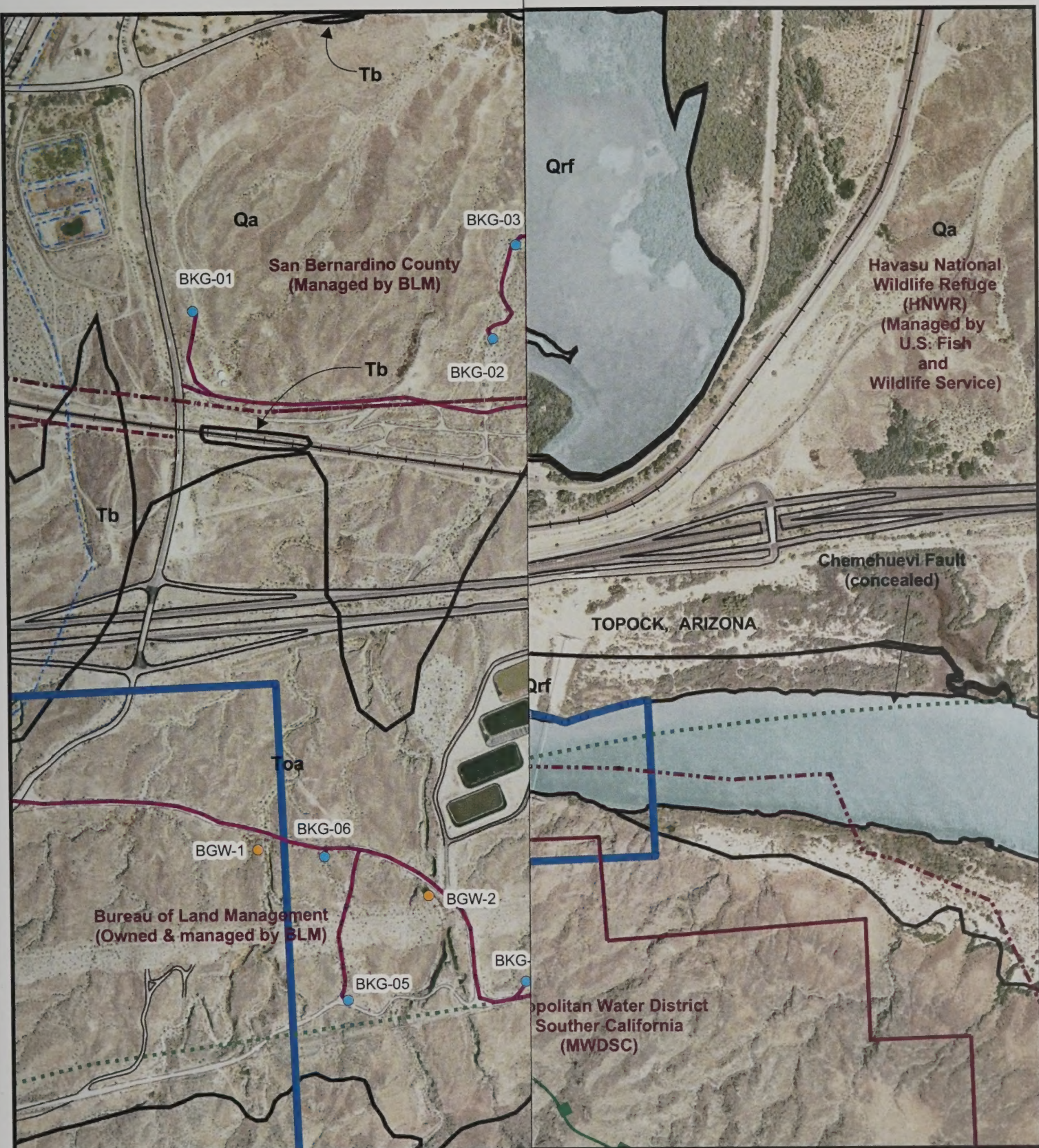












#### LEGEND

- Qrf = Quaternary Colorado River and recent Floodplain Deposits
- Qrg = Quaternary River Gravels
- Qa = Quaternary Alluvium and surficial deposits, undifferentiated
- Tb = Bouse Formation
- Toa = Tertiary Alluvium (Fanglomerate of Metzger and Loeltz)
- Tmc = Miocene Conglomerate (Bedrock)

#### FIGURE 4-1 BACKGROUND SOIL SAMPLE LOCATIONS AND SWMUS/AOCS ACCESS ROUTES

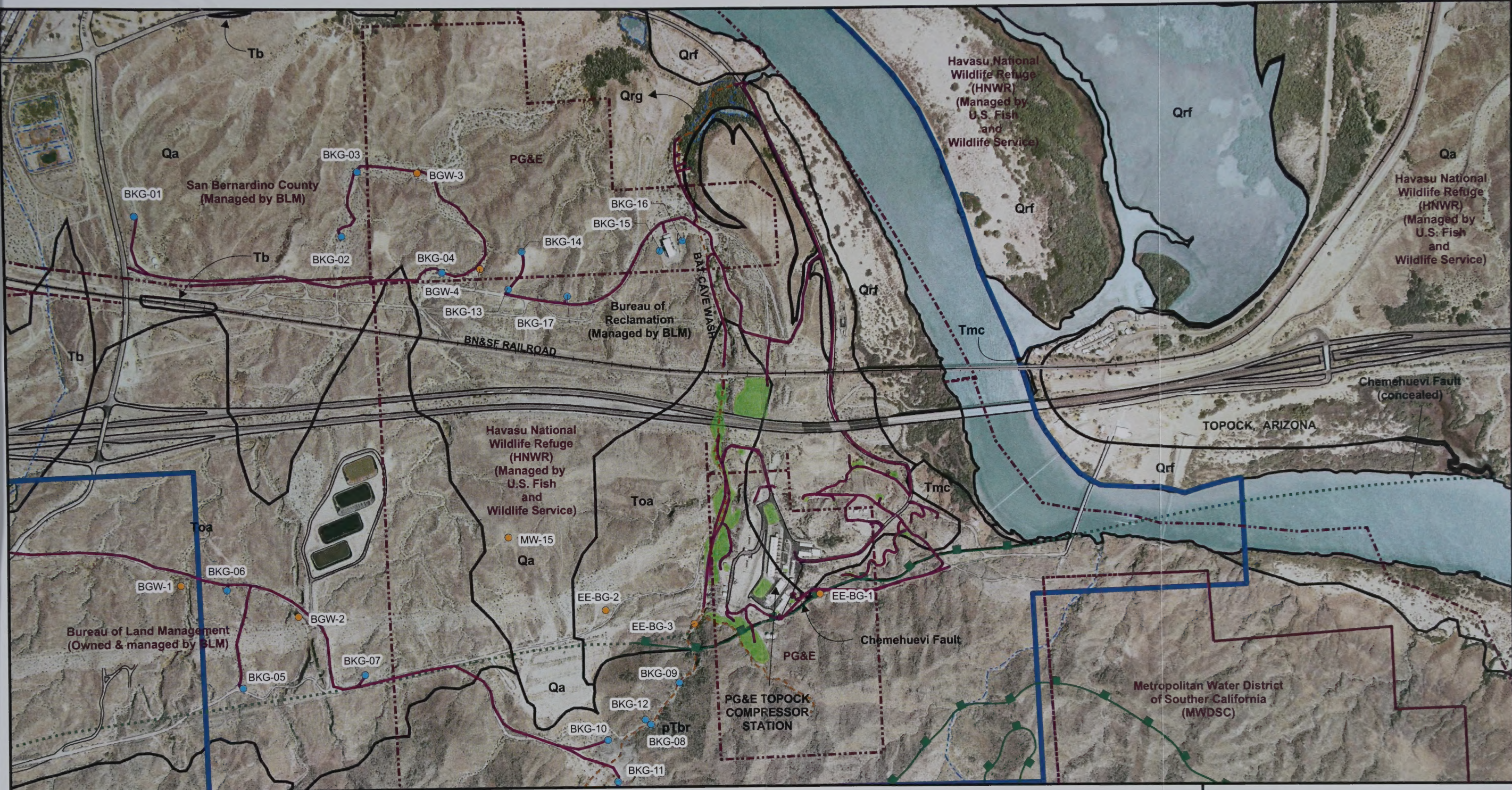
BIOLOGICAL RESOURCES COMPLETION  
REPORT FOR THE SOIL INVESTIGATION PROJECT  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

CH2MHILL







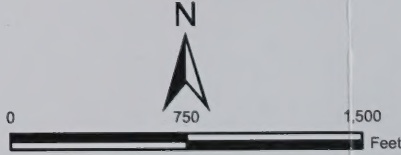


**LEGEND**

Qrf = Quaternary Colorado River and recent Floodplain Deposits  
Qrg = Quaternary River Gravels  
Qa = Quaternary Alluvium and surficial deposits, undifferentiated  
Tb = Bouse Formation  
Toa = Tertiary Alluvium (Fanglomerate of Metzger and Loeltz)  
Tmc = Miocene Conglomerate (Bedrock)

pTbr = Pre-Tertiary Bedrock (Metadiorite, Gneiss, Granitic Rocks)  
— Detachment Fault  
    barbs on downthrown side  
... Detachment Fault concealed  
--- Ravine  
● 2008 Soil Background Location  
● Pre-Existing Background Soil Sample Locations

— Solid Waste Management Unit (SWMU)  
— Area of Concern (AOC)  
--- Vehicle Access Route \*  
— Area of Potential Effects



NOTE:  
Generalized surface geologic map compiled from Metzger and Loeltz (1973), John (1987), Howard and others (1997) and PG&E technical reports.

**FIGURE 4-1  
BACKGROUND SOIL SAMPLE  
LOCATIONS AND SWMUS/AOCs  
ACCESS ROUTES**

BIOLOGICAL RESOURCES COMPLETION  
REPORT FOR THE SOIL INVESTIGATION PROJECT  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA













**Appendix A**  
**Awareness Training Sign-off Sheets**

---

## Appendix A

### Awareness Training Spin-off Sheet

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# Project Initiation Meeting- Part A Soil Investigation

## Biological & Cultural Resources Awareness Training Attendance Sheet

### Pacific Gas and Electric Topock Groundwater Extraction & Remediation Project 2008

Your signature constitutes an agreement to abide by the biological and cultural resources avoidance and minimization measures presented in this training.

| Date    | Name (print)        | Company/Affiliation | Telephone      | Signature          |
|---------|---------------------|---------------------|----------------|--------------------|
| 8/21/08 | Gyonne Weeks        | PGA                 | 805-234-2781   | <i>[Signature]</i> |
| 8-21-08 | Bob Dass            | PG&E                | (415) 973-7601 | <i>[Signature]</i> |
| 8-21-08 | Nancy McJannet-Hall | T.T. McJannet-Tribe | 925-768-4475   | <i>[Signature]</i> |
| 8-21-08 | Mike Canale         | CH2M Hill           | 510-325-0022   | <i>[Signature]</i> |
| 8-21-08 | Craig J. Johnson    | BLM                 | 928-718-3731   | <i>[Signature]</i> |
| 8-21-08 | Dawn Hays           | Hualapai Nation     | 928-769-2223   | <i>[Signature]</i> |
| 8/21/08 | Carl Taylor         | Turn-Key Const.     | 916-773-9840   | <i>[Signature]</i> |
| 8-21-08 | Bunny Colton        | CH2M Hill           | 541-740-3250   | <i>[Signature]</i> |
| 8-21-08 | ROBERT HERMAN       | CH2M HILL           | 714-227-4546   | <i>[Signature]</i> |
| 8-21-08 | GEORGE SHANNON      | BLM / DOI           | 928-505-1255   | <i>[Signature]</i> |
| 8-21-08 | PAT MOLONEY         | AF                  | 310-770-6833   | <i>[Signature]</i> |
| 8-21-08 | Dennis McDougall    | AF                  | 951-288-5567   | <i>[Signature]</i> |
| 8-21-08 | Chris Guenre        | DTSC                | 714-484-5422   | <i>[Signature]</i> |
| 8-21-08 | Rick Newill         | DOI                 | 602-639-2153   | <i>[Signature]</i> |
| 8-21-08 | BRIAN SWEET         | GREEN DRILLING      | 522-427-6899   | <i>[Signature]</i> |
| 8-21-08 | CHRIS SMITH         | PG&E                | 760-258-7899   | <i>[Signature]</i> |
| 8-21-08 | GLENN CANO          | PG&E                | 925-301-6954   | <i>[Signature]</i> |
| 8-21-08 | Dorel Roberts       | Baker Services      | 562-837-1036   | <i>[Signature]</i> |
| 8-21-08 | Jesse N. Williams   | Baker Services      | 562-837-1036   | <i>[Signature]</i> |
| 8-21-08 | GERALD VOGT         | CH2M Hill           | 530-229-3328   | <i>[Signature]</i> |
| 8-21-08 | CHRISTINA HAY       | CH2M Hill           | 714-552-7658   | <i>[Signature]</i> |
| 8/21/08 | Greg Neal           | DTSC                | 714-484-5458   | <i>[Signature]</i> |
| 8/21/08 | Arlo Brubaker       | Northstar           | 919-844-1719   | <i>[Signature]</i> |
| 8/21/08 | Lindi Hall          | OSFOS               | 760-265-7024   | <i>[Signature]</i> |
| 8/21/08 | Cliff Kaley         | BLM                 | 760-776-5962   | <i>[Signature]</i> |

X copy of report

X

AND, ✓

✓

X







Your signature constitutes an agreement to abide by the biological and cultural resources avoidance and minimization measures presented in this training.

| Date    | Name (print)   | Company/Affiliation | Telephone    | Signature   |
|---------|----------------|---------------------|--------------|-------------|
| 8/21/08 | Brian Vaux     | PZ INC / CH2M HILL  | 412-559-8435 | [Signature] |
| 8/21/08 | Bob Turner     | NORTHSTAR           | 949-580-2600 | [Signature] |
| 8/21/08 | B.B. Lucas     | LUCAS ADV/PCTE      | 916-444-7337 | [Signature] |
| 8/21/08 | FELTON BRICKER | PT WOOD TRUBE       | 920-346-1990 | [Signature] |
| 8/21/08 | Leo Leenhout   | HFA FMIT            | 520-881-7300 | [Signature] |
| 8/21/08 | Sergio Suarez  | CAT Museum          |              | [Signature] |





# Topock Compressor Station Supplemental Training Verification

|                                              |                                                                               |
|----------------------------------------------|-------------------------------------------------------------------------------|
| Date<br><b>9-18-08</b>                       |                                                                               |
| Time Began<br><b>7:45 AM</b>                 | Meeting Leader Name (Print)<br><b>CURT RUSSELL PG&amp;E / DENISE GAUTHIER</b> |
| Time Ended                                   | Meeting Leader Signature<br><i>Denise Gauthier</i>                            |
| Location<br><b>Topock Compressor Station</b> | Meeting Leader Employee ID                                                    |

## Topics Discussed

[Meeting Minutes - Please Attach (Refer to this document number and signed by Meeting Leader)  
Attach or Identify all documents, handouts or video provided, viewed and/or discussed]

*OPERATION LIFE SAVER, HIGHWAY-RAIL GRADE CROSSINGS, EDUCATION, ENGINEERING, ENFORCEMENT*  
*DOT X-ING NUMBER, MULTIPLE TRACK SIGNS, TITLE 49 CFR, THREE "L's"*

## ATTENDEES

| Company               |                              |                       | Company         |                        |                       |
|-----------------------|------------------------------|-----------------------|-----------------|------------------------|-----------------------|
| Print Last Name       | Signature                    | -Social- Security No. | Print Last Name | Signature              | -Social- Security No. |
| Hudson                | <i>Diablo Hudson</i>         | Turn-key              | <i>E. Smith</i> | <i>C. Smith</i>        | PG&E                  |
| McCasland             | <i>John McCasland</i>        | Turn-key              | TUREY           | <i>John R. Turey</i>   | PG&E                  |
| CAVALIERE             | <i>Michael Cavaliere</i>     | CH2M HILL             | EDGAR I. ARCEO  | EIA.                   | BOART LONGYEAR        |
| KELLY                 | <i>John Kelly</i>            | CH2M HILL             | GUERRE          | <i>Chris Guerre</i>    | DTSC                  |
| HANSEN                | <i>John Hansen</i>           | BOART LONGYEAR        | MUNGOVIA        | <i>Jose H. Munguia</i> | BOART LONGYEAR        |
| <del>David Cruz</del> | <del><i>David Cruz</i></del> | GREGG                 | RUSSELL         | <i>Greg Russell</i>    | PG&E                  |
| KIRSNIS               | <i>Don Kirsnis</i>           | GREGG                 | CANOSO          | <i>Bob Canoso</i>      | PG&E                  |
| DEACON                | <i>Don Deacon</i>            | GREGG                 |                 |                        |                       |
| TWEIDT                | <i>Rob Tweidt</i>            | NORTHSTAR             |                 |                        |                       |
| BREWSTER              | <i>Arlyn Brewster</i>        | NORTHSTAR             |                 |                        |                       |
| MOLONEY               | <i>Pat Moloney</i>           | Applied Fertilecooks  |                 |                        |                       |
| LUECK                 | <i>John Lueck</i>            | CH2M                  |                 |                        |                       |
| Brasios               | <i>John Brasios</i>          | Northstar             |                 |                        |                       |
| Frank                 | <i>John Frank</i>            | E2                    |                 |                        |                       |
| Collom                | <i>John Collom</i>           | CH2M Hill             |                 |                        |                       |











## Appendix B

### Photograph Documentation

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Appendix B  
Photograph Documentation

---





**Photo 1:** Pre-construction view of AOC 4



**Photo 2:** Post-construction view of AOC 4

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 3:** Pre-construction view of AOC 4, Debris Ravine



**Photo 4:** Post-construction view of AOC 4, Debris Ravine.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 5:** Pre-construction view of AOC 9.



**Photo 6:** Post-construction view northwest of AOC 9.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 7:** Pre-construction view of AOC 10A.



**Photo 8:** Post-construction view of AOC 10A.

Topock Soil  
Sampling Effort  
2008

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**Photo 9:** Pre-construction view of AOC 10B.



**Photo 10:** Post-construction view of AOC 10B.

Topock Soil  
Sampling Effort  
2008

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**Photo 11:** Pre-construction view of AOC 10C.



**Photo 12:** Post-construction view of AOC 10C.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 13:** Pre-construction view of AOC 10D.



**Photo 14:** Post-construction view of AOC 10D.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 15:** Pre-construction view of AOC 10D.



**Photo 16:** Post-construction view of AOC 10D.

Topock Soil  
Sampling Effort  
2008

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**Photo 17:** Pre-construction view of AOC 11A.



**Photo 18:** Post-construction view of AOC 11A.

Topock Soil  
Sampling Effort  
2008

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**Photo 19:** Pre-construction view of AOC 11B.



**Photo 20:** Post-construction view of AOC 11B.

Topock Soil  
Sampling Effort  
2008

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**Photo 21:** Pre-construction view of AOC 11C



**Photo 22:** Post-construction view of AOC 11C.

Topock Soil  
Sampling Effort  
2008

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**Photo 23:** Pre-construction view of AOC 11D



**Photo 24:** Post-construction view of AOC 11D.

Topock Soil  
Sampling Effort  
2008

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**Photo 25:** Pre-construction view of AOC 11E.



**Photo 26:** Post-construction view of AOC 11E.

Topock Soil  
Sampling Effort  
2008

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**Photo 27:** Pre-construction view of AOC 12A.



**Photo 28:** Post-construction view of AOC 12A.

Topock Soil  
Sampling Effort  
2008

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**Photo 29:** Pre-construction view of AOC 12B.



**Photo 30:** Post-construction view of AOC 12B.

Topock Soil  
Sampling Effort  
2008

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**Photo 31:** Pre-construction view of AOC 12C.



**Photo 32:** Post-construction view of AOC 12C.

Topock Soil  
Sampling Effort  
2008

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**Photo 33:** Pre-construction view of AOC 14.



**Photo 34:** Post-construction view of AOC 14.

Topock Soil  
Sampling Effort  
2008

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**Photo 35:** Pre-construction view of AOC 14.



**Photo 36:** Post-construction view of AOC 14.

Topock Soil  
Sampling Effort  
2008

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**Photo 37:** Pre-construction view of the former 300B Pipeline Liquids Tank location.



**Photo 38:** Post-construction view of the former 300B Pipeline Liquids Tank location.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 39:** Pre-construction view of the downstream portion of Batcave Wash near salt cedar stand.



**Photo 40:** Post-construction view of the downstream portion of Batcave Wash near salt cedar stand. .

Topock Soil  
Sampling Effort  
2008

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**Photo 41:** Pre-construction view of the downstream portion of Batcave Wash between Park Moabi Rd and Route 66.



**Photo 42:** Post-construction view of the downstream portion of Batcave Wash between Park Moabi Rd and Route 66.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 43:** Pre-construction view of a portion of Batcave Wash between Route 66 and the BNSF Railroad Tracks.



**Photo 44:** Post-construction view of a portion of Batcave Wash between Route 66 and the BNSF Railroad Tracks.

Topock Soil  
Sampling Effort  
2008

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**Photo 45:** Pre-construction view of a portion of Batcave Wash between the BNSF Railroad Tracks and Interstate 40.



**Photo 46:** Post-construction view of a portion of Batcave Wash between the BNSF Railroad Tracks and Interstate 40.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 47:** Pre-construction view of a portion of Batcave Wash between the BNSF Railroad Tracks and Interstate 40.



**Photo 48:** Post-construction view of a portion of Batcave Wash between the BNSF Railroad Tracks and Interstate 40.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 49:** Pre-construction view of a portion of Batcave Wash between the BNSF Railroad Tracks and Interstate 40.



**Photo 50:** Post-construction view of a portion of Batcave Wash between the BNSF Railroad Tracks and Interstate 40.

Topock Soil  
Sampling Effort  
2008





**Photo 51:** Pre-construction view of a portion of Batcave Wash north of Interstate 40.



**Photo 52:** Post-construction view of a portion of Batcave Wash north of Interstate 40.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 53:** Pre-construction view of a portion of Batcave Wash north of Interstate 40.



**Photo 54:** Post-construction view of a portion of Batcave Wash north of Interstate 40.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 55:** Pre-construction view of a portion of Batcave Wash north of Interstate 40.



**Photo 56:** Post-construction view of a portion of Batcave Wash north of Interstate 40.





**Photo 57:** Pre-construction view of a portion of Batcave Wash north of Interstate 40.



**Photo 58:** Post-construction view of a portion of Batcave Wash north of Interstate 40.

Topock Soil  
Sampling Effort  
2008

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**Photo 59:** Pre-construction view of a potential pipe disposal area.



**Photo 60:** Post-construction view of a potential pipe disposal area.

Topock Soil  
Sampling Effort  
2008

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**Photo 61:** Pre-sampling view of BKG-01 sampling location.



**Photo 62:** Post-sampling view of BKG-01 sampling location.

Topock Soil  
Sampling Effort  
2008

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**Photo 63:** Pre-sampling view of BKG-02 sampling location.



**Photo 64:** Post-sampling view of BKG-02 sampling location.

Topock Soil  
Sampling Effort  
2008

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**Photo 65:** Pre-sampling view of BKG-03 sampling location.



**Photo 66:** Post-sampling view of BKG-03 sampling location.

Topock Soil  
Sampling Effort  
2008

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**Photo 67:** Pre-sampling view of BKG-04 sampling location.



**Photo 68:** Post-sampling view of BKG-04 sampling location.

Topock Soil  
Sampling Effort  
2008

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**Photo 69:** Post-sampling view of BKG-05 sampling location.



**Photo 70:** Post-sampling view of BKG-05 sampling location.

Topock Soil  
Sampling Effort  
2008

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**Photo 71:** Pre-sampling view of BKG-06 sampling location.



**Photo 72:** Post-sampling view of BKG-06 sampling location.





**Photo 73:** Pre-sampling view of BKG-07 sampling location.



**Photo 74:** Post-sampling view of BKG-07 sampling location.

Topock Soil  
Sampling Effort  
2008

**CH2MHILL**





**Photo 75:** Pre-sampling view of BKG-08 sampling location.



**Photo 76:** Post-sampling view of BKG-08 sampling location.





**Photo 77:** Pre-sampling view of BKG-09 sampling location.



**Photo 78:** Post-sampling view of BKG-09 sampling location.

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**Photo 79:** Pre-sampling view of BKG-10 sampling location.



**Photo 80:** Post-sampling view of BKG-10 sampling location.





**Photo 81:** Pre-sampling view of BKG-11 sampling location.



**Photo 82:** Post-sampling view of BKG-11 sampling location.

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**Photo 83:** Pre-sampling view of BKG-12 sampling location.



**Photo 84:** Post-sampling view of BKG-12 sampling location.





**Photo 85:** Post-sampling view of BKG-13 sampling location.



**Photo 86:** Post-sampling view of BKG-13 sampling location.

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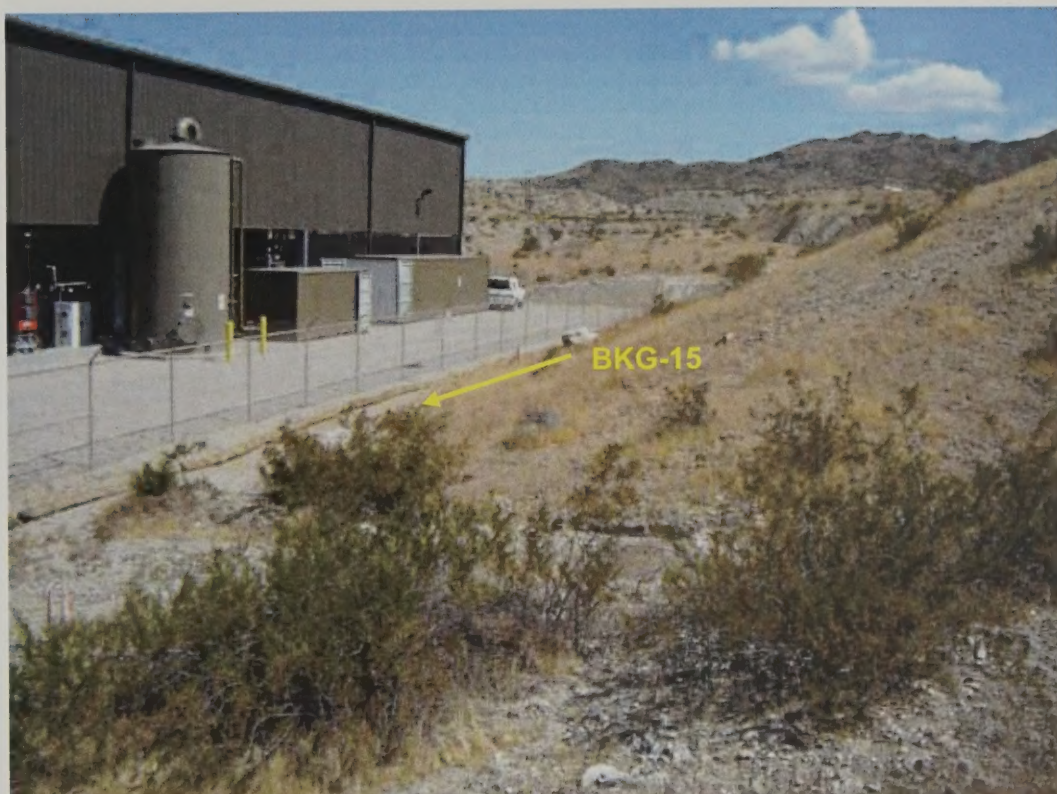


**Photo 87:** Post-sampling view of BKG-14 sampling location.



**Photo 88:** Post-sampling view of BKG-14 sampling location.





**Photo 89:** Pre-sampling view of BKG-15 sampling location.



**Photo 90:** Post-sampling view of BKG-15 sampling location.

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**Photo 91:** Post-sampling view of BKG-16 sampling location.



**Photo 92:** Post-sampling view of BKG-17 sampling location.

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**Photo 93:** Post-sampling view of BKG-17 sampling location.



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